

53455) in the range of about 50 N/mm<sup>2</sup> to about 150 N/mm<sup>2</sup>, and a breaking elongation A<sub>s</sub> (DIN 53455) in the range of about 20 % to about 80 %. The tensile strength R<sub>m</sub> can be in a range of about 70 N/mm<sup>2</sup> to about 110 N/mm<sup>2</sup>, and the breaking elongation A<sub>s</sub> is in a range of about 30 % to 60 %.

[0028] The high-performance polymer can have a modulus of elasticity E (DIN 53457, ISO 527-2) in a range of about 500 N/mm<sup>2</sup> to about 10,000 N/mm<sup>2</sup>. The modulus of elasticity E can be in a range of about 1,000 N/mm<sup>2</sup> to about 5,000 N/mm<sup>2</sup>.

[0029] The high-performance polymer may have an impact strength when notched (ISO 179) of about 40 kJ/m<sup>2</sup> to about 100 kJ/m<sup>2</sup>. The impact strength can be in a range of about 45 kJ/m<sup>2</sup> to about 90 kJ/m<sup>2</sup>.

[0030] The high-performance polymer can have a moisture acceptance FA (ISO 62) in the range of about 0.05 % to about 2 %. The moisture acceptance FA may be in a range of about 0.2 % to about 1.2 %.

[0031] The high-performance polymer may have a heat resistance WB (DIN 53461) in the range of about 120°C to about 230°C. The heat resistance WB can be in a range of about 170°C to about 220°C.

[0032] The high-performance polymer may have a low swelling Q in a range of about 0.02 % to about 0.2 %. The low swelling Q can be a low linear swelling Q<sub>L</sub>.

[0033] According to another feature of the invention, the high-performance polymer comprises at least one of polyphenylene sulphone (PPSU), polyether sulphone (PES), polyetherimide (PEI), and polysulphone (PSU).

[0034] Further, the headbox can include a nozzle, and the lamella may include a free end arranged to extend to a region of the nozzle. The free end may include an structure less end region with a dull lamella end having a height less than about 0.4 mm. The height of the dull lamella end can be less than about 0.3 mm.

[0035] According to still another feature of the present invention, the headbox can include a nozzle, and the lamella may include a free end arranged to extend to a region of the nozzle. The free end may include a structured end region with a dull lamella end having a height of more than about 0.5 mm. The structured end region can include grooves having at least one of (A) at least one of essentially rectangular, wedge-shaped, parabolic, and essentially round structure, and (B) varying depth. At least the lamella end can be constructed of the at least one high-performance polymer.

[0036] The lamella may be constructed of the high-performance polymer in a homogenous structure.

[0037] Further, the headbox may include a sectioned fiber suspension density control (dilution control).

[0038] According to another feature of the instant invention, the headbox can be designed for a flow speed greater than about 1,500 m/s, and preferably the flow speed may be greater than about 1,800 m/s.

[0039] Moreover, the lamella can be arranged as a separating lamella in a multi-layered headbox.

[0040] In accordance with still another feature of the invention, the lamella can be provided in combination with a headbox with a sectioned fiber suspension density control. The lamella may be located within the headbox.

[0041] Further, the lamella may be in combination with a headbox designed for a jet speed greater than about 1,500 m/s, and, preferably, the jet speed is greater than about 1,800 m/s.

[0042] In accordance with still yet another feature of the present invention, the lamella may be in combination with a multi-layered headbox. The lamella can be integrated into the multi-layered headbox as a separating lamella.

[0043] According to yet another feature of the instant invention, the web

production machine can include one of a paper, cardboard, and tissue machine.

[0044] The present invention is directed to a headbox of a web production machine. The headbox includes a lamella formed of at least one high-performance polymer. The at least one high-performance polymer includes high stability, high heat resistance, and good to very good resistance to at least one of alkaline solution and acid

[0045] Other exemplary embodiments and advantages of the present invention may be ascertained by reviewing the present disclosure and the accompanying drawing.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0046] The present invention is further described in the detailed description which follows, in reference to the noted plurality of drawings by way of non-limiting examples of exemplary embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:

[0047] Figure 1 schematically illustrates a longitudinal sectional view of a headbox having two lamellae according to the invention;

[0048] Figure 2 schematically illustrates a perspective view of a multi-layered headbox having a lamella according to the invention;

[0049] Figure 3a schematically illustrates a longitudinal sectional view of an end region of a lamella according to the invention; and

[0050] Figure 3b schematically illustrates top views from a direction IIIB depicted in Figure 3a of various structured end regions of lamellae according to the invention.

#### DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0051] The particulars shown herein are by way of example and for purposes